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STN	**Družicové zemské stanice a systémy (SES) Pevné a pohyblivé zemské stanice v širokom pásme komunikujúce s negeostacionárnymi satelitnými systémami (WBES) vo frekvenčných pásmach od 11 GHz do 14 GHz Harmonizovaná norma pre prístup k rádiovému spektru**	**STN EN 303 981 V1.3.1** 87 3981

Satellite Earth Stations and Systems (SES); Fixed and in-motion Wide Band Earth Stations communicating with non-geostationary satellite systems (WBES) in the 11 GHz to 14 GHz frequency bands; Harmonised Standard for access to radio spectrum

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Fixed and in-motion Wide Band Earth Stations communicating with non-geostationary satellite systems (WBES) in the 11 GHz to 14 GHz frequency bands;
Harmonised Standard for access to radio spectrum

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
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Contents

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.1] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.7].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

National transposition dates	
Date of adoption of this EN:	10 October 2022
Date of latest announcement of this EN (doa):	31 January 2023
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2023
Date of withdrawal of any conflicting National Standard (dow):	31 July 2024

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the RE Directive [i.1]. The modular structure is shown in ETSI EG 201 399 [i.2].

The present document is largely based on ETSI EN 303 979 [i.4], for ESOMPs operating with NGSO satellites, and ETSI EN 303 980 [i.5] for NEST operating with NGSO satellites.

The present document may also be applicable to the frequency band 14,0 GHz to 14,50 GHz (Earth-to-space) and 10,70 GHz to 12,75 GHz (space-to-Earth) subject to national regulation.

Annex A (informative) provides the relationship between the present document and the essential requirements of Directive 2014/53/EU [i.1].

Annex B (normative) describes methods of taking radiated measurements.

Annex C (normative) describes methods of taking conducted measurements.

Annex D (informative) describes requirements for RF measurement cables.

Annex E (informative) describes use of RF waveguides.

Annex F (informative) describes measurement equipment.

Annex G (informative) describes the applicability of parameters in ETSI EG 203 336 [i.8].

Annex H (informative) is the Bibliography.

Annex I (informative) is the Change history.

Recital 10 of Directive 2014/53/EU [i.1] states that "*in order to ensure that radio equipment uses the radio spectrum effectively and supports the efficient use of radio spectrum, radio equipment should be constructed so that: in the case of a transmitter, when the transmitter is properly installed, maintained and used for its intended purpose it generates radio waves emissions that do not create harmful interference, while unwanted radio waves emissions generated by the transmitter (e.g. in adjacent channels) with a potential negative impact on the goals of radio spectrum policy should be limited to such a level that, according to the state of the art, harmful interference is avoided; and, in the case of a receiver, it has a level of performance that allows it to operate as intended and protects it against the risk of harmful interference, in particular from shared or adjacent channels, and, in so doing, supports improvements in the efficient use of shared or adjacent channels*".

Recital 11 of Directive 2014/53/EU [i.1] states that "*although receivers do not themselves cause harmful interference, reception capabilities are an increasingly important factor in ensuring the efficient use of radio spectrum by way of an increased resilience of receivers against harmful interference and unwanted signals on the basis of the relevant essential requirements of Union harmonisation legislation*".

As a consequence, the present document includes both transmitting and receiving parameters aiming to maximize the efficient use of radio spectrum.

1 Scope

The present document specifies technical characteristics and methods of measurements for fixed and in-motion Earth Stations communicating with non-geostationary satellite systems (WBES) in the 11 GHz to 14 GHz FSS frequency bands, which have the following characteristics:

- The WBES is further defined as one of two classes of Earth stations, class A and class B. The clauses in the present document apply to both classes unless separately delineated.
- The WBES is designed for both in-motion and stationary operation.
- The WBES operates in-motion on various platforms such as trains, maritime vessels, aircraft and other vehicles and, therefore, may be subject to occasional disturbances and interruptions in the satellite link.
- The WBES is operating as part of a satellite system used for the provision of broadband communications.
- The WBES is comprised of all the equipment, electrical and mechanical, from the antenna itself to the interface with other communications equipment on a mobile platform.
- The WBES comprises one or more emitters and the system overview as given in figure 1 should be interpreted accordingly.
- The transmit and receive frequencies are shown in table 1.

Table 1: Frequency bands

	Frequency Bands
Transmit (Earth-to-space)	14,0 GHz to 14,50 GHz
Receive (space-to-Earth)	10,70 GHz to 12,75 GHz

- The WBES transmits within the frequency range from 14,0 GHz to 14,50 GHz.
- The WBES receives within the range from 10,70 GHz to 12,75 GHz.
- The Class A WBES transmits at elevation angles of 35° or greater, relative to the horizontal plane.
- The Class B WBES transmits at elevation angles of 25° or greater, relative to the horizontal plane.
- The WBES uses linear or circular polarization.
- The WBES communicates with non-geostationary satellites.
- The WBES is designed for unattended operation.
- The WBES is controlled and monitored by a Network Control Facility (NCF). The NCF is outside the scope of the present document.

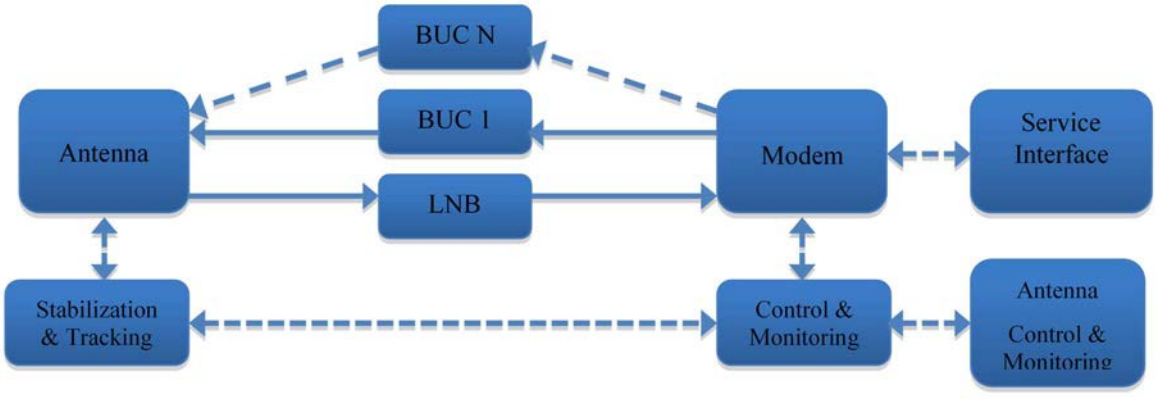

Figure 1: WBES System Overview

The present document applies to the WBES with its ancillary equipment and its various telecommunication ports, and when operated within the boundary limits of the operational environmental profile as required by its intended use and when installed as required by the intended use or in the user documentation.

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.1] is given in annex A.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] CISPR 16-1-1 (2019): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus".

[2] CISPR 16-1-4 (2019): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements".

[3] ETSI ETS 300 457 (Edition 1) (11-1995): "Satellite Earth Stations and Systems (SES); Test methods for Television Receive Only (TVRO) operating in the 11/12 GHz frequency bands".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Commission Implementing Decision C(2015) 5376 final of 04.08.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

[i.2] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the Radio & Telecommunication Terminal Equipment Directive 1999/5/EC (R&TTE) and a first guide on the impact of the Radio Equipment Directive 2014/53/EU (RED) on Harmonized Standards".

[i.3] ETSI TS 103 052: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Radiated measurement methods and general arrangements for test sites up to 100 GHz".

[i.4] ETSI EN 303 979 (V2.1.2): "Satellite Earth Stations and Systems (SES); Harmonised Standard for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in non-geostationary orbit, operating in the 27,5 GHz to 29,1 GHz and 29,5 GHz to 30,0 GHz frequency bands covering the essential requirements of article 3.2 of the Directive 2014/53/EU".

[i.5] ETSI EN 303 980 (V1.1.1): "Satellite Earth Stations and Systems (SES); Harmonised Standard for fixed and in-motion Earth Stations communicating with non-geostationary satellite systems (NEST) in the 11 GHz to 14 GHz frequency bands covering essential requirements of article 3.2 of Directive 2014/53/EU".

[i.6] ETSI TR 100 028 (all parts) (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[i.7] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

[i.8] ETSI EG 203 336 (V1.2.1): "Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".

[i.9] IEC 60153 parts 1 to 7 (IEC 60153-1 to 60153-7): "Hollow metallic waveguides".

[i.10] Recommendation ITU-R BO.1213: "Reference receiving earth station antenna pattern for the broadcasting-satellite service in the 11.7-12.75 GHz band".

[i.11] ETSI TR 102 273 (all parts) (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties".

[i.12] ANSI C63.5 (2006): "American National Standard for Electromagnetic Compatibility Radiated Emission Measurements in Electromagnetic Interference (EMI) Control Calibration of Antennas (9 kHz to 40 GHz)".

[i.13] 3GPP TR 37.842: "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Universal Terrestrial Radio Access (UTRA); Radio Frequency (RF) requirement background for Active Antenna System (AAS) Base Station (BS)".